DOCUMENT RESUME

ED 349 794 FL 020 276

AUTHOR Kennedy, Geraldine
TITLE Computers in Language Teaching.
PUB DATE Nov 89
NOTE 22p.; In: Little, David, Ed. and O Meadhra, Bebhinn, Ed. Media Technologies and Language Learning. Proceedings of an IRAAL Seminar (Dublin, Ireland, November 25, 1989); see FL 020 272.
PUB TYPE Speeches/Conference Papers (150) -- Reports - Descriptive (141)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Communicative Competence (Languages); *Computer Assisted Instruction; Foreign Countries; *Language Laboratories; Listening Skills; Reading Skills; *Second Language Learning; Teaching Methods; Writing Skills

ABSTRACT

There has been a growing interest in the use of the computer in language learning because of its capacity to offer interactive learning and to handle a much wider range of activities than other educational aids. Although the traditional view of computer-assisted language learning (CALL) implies the substitution of the computer for the teacher and wholly self-use of the machine, this paper emphasizes CALL's advantage of enhancing the teacher's ability to teach. Some practical ways to use the computer in developing vocabulary and grammar are discussed. Ways to use CALL in teaching the four primary skills--reading, writing, speaking, and listening--are also described. Advantages include immediate feedback and individualization. It is concluded that future developments in CALL must be rooted in research and that consideration must be given to the sort of learning environment that is desirable. A list of software (17 items) and its availability is appended. Contains 29 references. (LB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED349794

Computers in language teaching

Geraldine Kennedy
Centre for Language and Communication Studies
Trinity College
Dublin

Introduction: educational technology, computers, and computer-assisted language learning

The impact of technology on society and on individual lives has increased dramatically in recent decades, and the computer, geared to the achievement of efficiency, is "already part of everyday reality and will become increasingly so with the accelerating pace of current technological developments" (Brown 1988, p.86). In the most general sense, technology refers to the application of knowledge for more effective performance of certain tasks and activities; it converts spontaneous and unreflective behaviour into behaviour that is deliberate and rationalized. However, some people question whether the use of technology is wholly beneficial, and in the field of educational technology conflicting attitudes and values surround and sometimes confuse the issue.

In a formal learning situation objectives are defined by the syllabus and attained by the learner through the mastery of prescribed tasks. The primary function of educational technology is to present these tasks to the learner; it is in principle only a medium through which material can be offered to the learner and hence the conditions for learning created. It cannot of itself ensure that effective learning will take place. However, a given technology can enhance the interest or appeal of the task and thus, hopefully, increase the learner's motivation to learn.

In recent years there has been a growing interest in the use of computers in language learning. The inherent advantage of the computer is that it can offer interactive learning and can handle a much wider range of activities and is more powerful than other educational aids. According to Butler (1985) the use of computers in language learning may be divided into (a) the automatic analysis of texts, which can be used as an aid to course design, and (b) the use of the computer to present teaching materials to the learner.

FL 020 276

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Geraldine Kennedy

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

Minor changes have been made to improve reproduction quality.

Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Higgins (1988) proposes that the computer can be given two roles, that of the instructor, or magister, on the one hand and that of the obedient slave, or pedagogue, on the other. He suggests that the computer's main value is as an environment which allows trial-and-error learning and language experiments to be carried out. Unfortunately, the traditional view of computer-assisted language learning (CALL) implies the substitution of the computer for the teacher, and a wholly self-access use of the machine. It suggests that a CALL lesson is determined solely by the interaction between learner and computer and ignores methodological considerations in which the teacher plays a key role (Jones & Fortescue 1987). It is essential to realize that this type of claim is not being made for computer-assisted language learning. As the term itself implies, the emphasis is on using the computer to assist the learning process. The objective of computer-assisted language learning is to enhance the teacher's ability to teach, not to replace him. CALL cannot cover the whole language teaching curriculum, nor is it a self-contained methodology.

An unfortunate and widely held misconception is that CALL is intrinsically behaviourist in nature. It is not surprising, then, that language teachers in general seem reluctant to approach this latest technology. Feedback derived from questionnaires collected by CILT (the Centre for Information on Language Teaching and Research, London) suggests that the vast majority of language teachers have no interest in "what they see as automated programmed learning, a method underpinned by the audio-lingual method of language learning and supported by behaviourist learning theories" (Brown 1988, p.87). It has been suggested that the concern expressed by teachers opposed to CALL is based on their prior experience with "revolutionary" instructional media. Many expect that the computer will be just another in a series of highly touted technological tools that have neither revolutionized learning nor lived up to initial promises (Dunkel 1987).

It is important to bear in mind the relatively restricted role of computers in the overall language learning process. Davies (1982) points out that the computer may be an excellent aid to presenting one aspect of the subject but inferior to more traditional methods in presenting other aspects. It will perform at remarkable speed exactly the instructions given it either by the computer program or by the user *via* the keyboard or some other input device such as the light pen, touch-sensitive screen, or mouse. It is a flexible aid that will lend itself to a variety of different purposes, but it has

BEST COPY AVAILABLE

limitations, because for all its speed and accuracy, it remains a mere machine. To some degree the computer can replicate human activity, but only if that activity can be comprehensively and unambiguously described. It can provide feedback only by using information stored in its memory. It operates in a pre-determined fashion and cannot cope with the unexpected, which rules out any genuinely open-ended activity. It is poor at assessing answers because it cannot store every wrong answer that might be given and make an appropriate response to each. It cannot judge the reason for a particular wrong answer, whether carelessness, for example, or faulty grasp of a grammatical rule. Because the computer's answers are not based on understanding, its contribution is heavily dependent on the program-writer's ability to anticipate all contingencies. In addition, the material that can be usefully handled by the computer represents at best a tiny fraction of the linguistic knowlege which a teacher brings to bear in the language class. The computer is deficient in that it has no breadth of knowledge and no ability to find comparisons in the everyday experience shared by learners and teacher (Higgins 1988).

Yet despite its limitations, the computer represents a promising development in educational technology and has many advantages for both teacher and learner. One of the computer's strongest points is its interactive ability, which means that it can conduct a two-way learning session with the learner. It can respond to the learner and provide immediate and (through complex branching) differentiated feedback. It can take the learner through subsequent attempts at a question and to different sections of the program depending on the nature of the learner's response. Unlike any other classroom aid, the computer can vary the exercise each time it is done and within certain limits adapt its language to what the learner produces. This is the characteristic that allows it to endlessly vary the stimuli in a drill, and it can repeat an activity with none of the errors which easily arise from repetition by humans. The computer is good at presenting statements and illustrating them with examples, and can offer tremendous scope for dynamic explanations using colour, graphics, and animation in a way that far outclasses talk and chalk. When the learner has completed the session, the computer can record results, errors, success rates, time spent, and much more information for the teacher to view at a later date if necessary. As a result of this information, or from the reactions of the learners, the teacher is able to revise and refine the materials at any stage, unlike a text book, which the teacher cannot change. The computer gives the learner the

opportunity to benefit from material carefully designed or selected by the teacher. Using feedback and reports from the learner's performance, the teacher can tailor packages (linguistic data and programs) specifically to the needs of individual learners.

By using a computer, learning sessions can be made more concentrated than normal classes. Unlike the conventional "full-frontal" pedagogical procedures described by Sinclair & Coulthard (1975), which place the learner in a largely passive role, there is no "low attention" period with the computer as the learner awaits his turn in class. It has been estimated that a learner in a class of fifteen may have five interactions with the teacher during a 50-minute period, but when working with the computer the figure is at least ten times greater. In addition, the computer can accommodate different speeds of learning. While limits can be imposed on the time available for answering questions, which is valuable when the computer is used for testing purposes, more importantly it allows learners to work at their own pace and to find their own level. The possibility of working at their own pace is valuable not only for "slow" learners but also for learners who finish early and need extra tasks and material to stretch them.

The computer seems to be a powerful motivating force for productive study. In computer-assisted learning publications, frequent reference is made to the power of the computer to motivate and to absorb the learner's attention. For example, Kelly (1984, p.9), speaking of children interacting with microcomputers, points out that a "degree of motivation which would be regarded as exceptional in any other context becomes commonplace in this". Students seem to enjoy themselves more and are willing to spend more time at the keyboard than on more conventional activities (Windeatt 1986). Experience has shown that working with the computer is rated highly by students, that attention spans are longer, and that the material is usually learnt better and more quickly. Surveys of learners' attitudes to their experience with CALL reveal positive reactions for motivation, continued enrolment, and the quality and pace of learning (Ahmad et al. 1985).

Motivation is an important variable in the learning process. Educational psychologists believe that the effects of motivation are largely mediated by such intervening variables as the focussing of attention, persistence, and increased frustration tolerance, and that the most appropriate way of maintaining motivation is to focus on the cognitive aspects of learning. Many aspects of the learning situation can foster cognitive drive by

attracting and sustaining attention. In this regard, the novelty of the computer may arouse interest, but the nature and quality of the software or programs is crucial. Individual learners have particular needs, abilities, interests, and limitations. Learners need to feel that their studies are meaningful and relevant to their own specific requirements. In terms of CALL this entails setting the learner tasks (or enabling him to set himself tasks) which are both relevant and rewarding, i.e., challenging, stimulating or entertaining. In addition, the material offered should be at a level appropriate to the learner's abilities and should offer clues and HELP options so that he can make a reasonable attempt at the material, and even an EXIT facility so that he can leave the exercise if he wants. Learners find it particularly satisfying to be able to control their learning. Nothing dampens and extinguishes motivation more quickly than frustration and failure. To account for individual differences, the teacher can aim to provide a variety and choice of interactive learning routines. Of particular advantage in this regard is the possibility of using an "authoring package" which provides the teacher with a relatively trouble-free way of creating materials tailored to the needs and interests of his learners, as the same basic algorithm may be used for any number of programs which differ only in their linguistic content. In addition, databases containing various kinds of help (thematic, lexical, grammatical, and so on) could be built up by the teacher in response to learner feedback; the same database could be used in relation to an unlimited number of interactive routines (Little 1987).

In language teaching the computer can be used essentially in three ways. It can be used to present material to the whole class; it can be used by small groups of learners working together at the screen either in the classroom or on a self-access basis; and it can be used as an individual resource either in the classroom or on a self-access basis. How the computer is used will depend on the number of computers available, on the teacher, and on the activity being undertaken, as some types of material will lend themselves to one form of exploitation rather than another.

Computers can either be used as "stand-alone" systems, where each computer is an independent unit with its own peripherals, or they can be linked together to form a Local Area Network (LAN) and share peripherals such as a disk drive and a printer. With the stand-alone system the teacher has to provide one disk for each computer or take the disk from one computer to another to load the program. In a networked system learners at each terminal can all access the same central disk drive by selecting from

a menu. In addition, by using an add-on called a modem it is possible to link a computer *via* the telephone line to commercial databases and external networks or to computers in other institutions.

Descriptions of the objectives of second and foreign language teaching usually stress instruction in the four skills of listening, speaking, reading, and writing. This classification, which isolates the skills into sub-components of the overall process of communication, is useful for looking at each of the skills separately, but it is an oversimplification since in real-language activity it is often hard to separate one skill from another. Nevertheless, the classification enables us to see in broad terms where the computer's present capabilities lie. An essential characteristic of language is that it is primarily a spoken medium. This is obviously a problem for the computer since its ability to deal with speech is far less developed than its ability to deal with written signals. But it is one of the great advantages of the computer that any activity at the keyboard will tend to involve a variety of skills, and it is understood that these skills rest on a foundation of language knowledge that includes vocabulary, grammar and culture. Before looking at some of the ways in which the computer can be used to develop the four language skills, we will look at some practical ways in which the computer can contribute to the development of vocabulary and grammar.

Teaching vocabulary

Work with vocabulary is generally a component of reading and writing courses, and learners are often expected to pick up new vocabulary from their course books and readers and integrate it into their general language competence. Foreign language learners whose mother tongue uses a different writing system from the target language have the added difficulty that they must first become familiar with individual letters and alphabetical order before they can recognize words, which in turn is essential before any kind of independent work on vocabulary can take place. There are many computer programs available which were not specially devised for foreign language learners but are suitable for them. They include programs such as *Happywriting*, which can help learners with the recognition and formation of upper and lower case letters. Some programs of this kind simply draw large letters slowly on the screen so that the learner can imitate the process on paper, while others allow the learner to practise writing on screen using a light pen or a graphics pad.

For learners familiar with individual letters, the computer can give useful practice in word-recognition and word-building. At a basic level, a simple program like *Wordspin*, which concentrates on the individual letters in a word, helps learners to recognize whole word shapes. The learner selects a category, e.g., animals or vegetables, and is then presented with the letters of a word which is rotating. The learner's first task is to arrange the letters of the word in correct sequence; then the learner must replace randomly blanked out letters; and finally the whole word is blanked out and the learner must type it in. Another effective program flashes a word on the screen and the learner's task is to type in the word. Very often a timing element is built into these programs, ranging from a few seconds down to a fraction of a second, and the learner can increase speed as his recognition skills improve. The advantage of these programs is that the learner can use them on a self-access basis without taking up anyone's time, and without the fear of being seen to be slow. Familiarity with new words comes with use and practice, and a good way to practise vocabulary is to play word games. While this can sometimes be difficult to manage and co-ordinate with a large group of learners in the classroom, it is very feasible using the computer. There is a wide variety of games available to suit all abilities and tastes, such as *Hangman*, *Snap*, *Scrubble*, *Mindword*, and *Wordsquare*. These games can be used by individuals or by small groups working together either in the classroom or on a self-access basis. Different games can use the same sets of words, so that the learner can practice a particular lexical set with whatever game or activity suits him best.

It is a common practice of language learners to keep vocabulary notebooks in which they write down new words together with their meanings and an illustrative sentence or two. With a computer it is possible to use a simple database to build up, store and access vocabulary. A program of this kind specifically designed for language learners is *Wordstore*, which allows the learner to write up to 1,000 entries on a single disk, each entry consisting of a word or phrase, a definition and an illustrative sentence. Entries can be corrected, modified or embellished, and deleted when they are no longer needed; the learner can print out his own "dictionary"; and he can test himself by having the computer display a randomly chosen definition from which the keyword has been omitted. This on-screen dictionary has a number of advantages over a conventional notebook. It stores information in alphabetical order; items can be added and deleted with no crossing-out and no mess, so that presentation is always clear and attractive; and the test

option provides an interactive dimension entirely lacking in a vocabulary notebook. Such a program could be made available as a reference disk containing all the new vocabulary in the class course book or specialist word lists (Jones & Fortescue 1987). The computer can also be used as an interactive dictionary: when he encounters an unfamiliar word the learner types it into the computer; and instead of giving direct assistance the computer offers the learner several possible meanings and invites him to use context and in some cases morphological clues to decide on the meaning of the word. Each time the learner uses the computerized dictionary he is asked to develop his skills in handling new information (Wyatt 1984).

Teaching grammar

Mastery of a language involves the ability to produce correct sentences. Language use involves a knowledge of the rules of grammar which, while seeming to place a restriction on all the things we want to do, actually make communication possible in the first place (Higgins 1988). While the debate about the role of grammar in language teaching still continues, almost all activities in the language classroom can be said to include grammar. Free discussion, simulations, reading and writing tasks all bring the learner's grammatical abilities into play constantly. Learners vary widely in the speed with which they understand and grasp grammatical generalizations and rules. For the learner who requires longer, more carefully structured explanations, the computer has a number of advantages as a medium of demonstration. Visual presentation in the form of pictures, graphics or tables can help to make clear the relationship between form and meaning. Simple animation can be used to show grammatical processes, such as the "do" insertion in English negation and question forms, or word order in subordinate clauses in German. Indeed, German subordinate clauses are beloved of program authors, since they provide the opportunity to show off the facility for moving words around the screen. It can be frustrating for teachers to spend much of their time drilling grammar points, to the detriment of other, more communicative activities. Computerized versions of traditional question-and-answer and multiple-choice exercises provide feedback for learners that is more sophisticated than a written answer sheet. The computer will, for example, allow a second or subsequent attempt when the learner gives a wrong answer, and may provide

CLUES and HELP levels if the learner has difficulty with a question. In the language class individuals or groups of learners can be working productively at the keyboard, leaving the teacher free to deal with particular problems that arise in particular groups.

Inflectional morphology is an area of grammar which is most suited to the computer, since alternative answers are not usually possible. In such exercises the learner is required to provide noun endings, adjective endings, or different parts of the verb, to change the grammatical case or the word order, and so on. These exercises may be presented in different ways but very often they are presented as gap-filling exercises. The most traditional exercises in CALL are simple matching exercises, which are much the same as on paper. The learner is presented with two columns of sentence halves, e.g., deductions and reasons, which he has to match to make acceptable sentences. On the computer these types of exercises can have HELP and CHEAT facilities built into the program and can be given a game format where the learner tries to do the exercise without losing a life. The computer's capacity for randomization means that items can be presented in a different order when learners repeat the exercise. Using an authoring program such as *Matchmaster*, the teacher can easily create his own matching exercises to suit the interests and abilities of his students. Another traditonal CALL program is the multiple-choice format, which usually consists of a number of questions to which learners choose their answers by moving an arrow from item to item. If they choose an incorrect answer, an error message will appear on the screen. Error messages are necessarily short and cannot compete with the explanation the teacher could give in person, but they serve their purpose. Using an authoring package like *Choicemaster*, the teacher can create multiple-choice programs either in the tutorial mode, that is, giving immediate feedback, or in the test mode, with feedback delayed until the end of the test.

An example of an activity which would not be possible without a computer and is more suitable for more advanced learners is the exploratory program. Such a program gives the computer a rule or rules for handling some feature of grammar, e.g., a word inflexion, a sentence transformation, or even the selection of an appropriate stylistic form. Learners input questions or phrases into the computer in order to see what it does, and attempt to deduce the rules and assess their adequacy. Higgins (1988, p.44) suggests that when a computer is used in this way, the language learner is not just learning from the computer but from the total learning en-

vironment, which includes reference books, teacher, the pooled knowledge of the group, and the dormant knowledge of the individual.

Teaching reading

By its very nature reading is a highly individual process. Even in a class where the proficiency levels of the learners are quite similar, reading speeds and comprehension abilities can vary widely. With reading activities, it is usually necessary for the teacher to choose an average speed of presentation, which may still be frustratingly rapid for slow learners, or too slow for abler learners, not challenging and developing their skills as it should. A principle in the development of reading skills is to provide students with reading materials at a level slightly above their current reading proficiency so as to challenge them without causing frustration, and to permit each student to complete the reading and any activities based on it at an individual pace. The computer enables the teacher to individualize the reading class to a certain degree (Wyatt 1989).

It has been suggested that teaching reading may largely be a matter of convincing learners that they will enjoy it if they do more of it (Higgins 1988). Learners can be motivated to read if reading is a condition of enjoying some other experience, such as solving a problem or winning a game. Almost all CALL programs, whether oriented towards reading or not, involve the learner in reading text for a real purpose, that is, the successful completion of an activity. An example of this is the reading maze, which has been used in language learning for some time. With a reading maze the learner is presented with a chunk of text which outlines a situation and several possible courses of action. The learner makes a choice and is presented with an updated situation and a further choice of options. The computerized maze commits the learner to the choice he has made and can record the number of choices made before a successful outcome is reached. The key ingredient in this type of program is the successful comprehension of the text that describes each new situation. The linguistic complexity of the description can be matched to the learner's reading level.

In teaching reading skills, a common approach is to give learners a piece of text to read with follow-up exercises to test their comprehension. By using a computer, text can be modified or adjusted and reading passages made available in a number of versions. For example, an authentic text

which uses a large number of relative pronouns can be introduced first for comprehension in a simpler form without relative pronouns. When it is clear that the learner has grasped the modified version, the more difficult text can be displayed for further work, or the two texts can be displayed side by side on the screen. The computer programs most commonly used to test reading comprehension and provide feedback to the learner are traditional multiple-choice and fill-in exercises. They can be used to focus attention on different aspects of reading, like guessing the meaning of words from context, skimming and scanning, paragraph focus, and so on.

One skill which appears to be an important component of fluent reading is prediction, that is, the continuous formation of hypotheses about what is coming next based on the material already encountered. In one type of program designed to develop this skill, learners read a number of sentences and are then given a choice of several possible examples of a "next sentence". HELP levels can be built into the program to assist the learner, and if the answer is incorrect the computer can draw attention to the features in the preceding sentences that militate against the choice.

An important area of reading skills development is training learners to improve their reading speed and efficiency. Research has shown that poor readers tend to approach reading as a word-by-word decoding task, while efficient readers read in chunks, taking in groups of words with a single eye fixation and making fewer regressions to earlier parts of the text. An effective way to help learners develop this skill is to use the computer with a timing program. The computer can display text, which should be at the learner's current ability level, for a limited period of time, which is fixed either in advance by the programmer or at the keyboard by the learner. An example of a program of this type is *Speedread*, an authoring package which allows the learner to choose a piece of text and any of nine different speeds. According to his level of comprehension, the learner can regulate the activity to suit his ability and can graduate to higher speeds as he learns to read more efficiently.

A well-established activity in the language classroom is the cloze test, in which every *n*th word is deleted from a piece of continuous text and the learner is asked to supply an appropriate word for each gap. The creation of cloze tests is simplified by using a computerized authoring package such as *Gapkit* or *Clozemaster*. *Gapkit* allows the gaps to be whole words, parts of words, or phrases, and is useful for creating exercises which have a specific pedagogic point, as the gaps can be limited to specific types of words, such

BEST COPY AVAILABLE

as prepositions and articles, or parts of words, such as prefixes, suffixes and verb endings. With *Clozemaster*, which has HELP facilities, learners can select a text and then decide how difficult they want the task to be as they can instruct the computer to delete anything from every fifth to every fifteenth word. Since the gaps are created on the spot by the computer, learners can work on the same text on subsequent occasions, each time choosing a different gap frequency. The computer's ability to mutilate text is taken to its extreme with total deletion programs such as *Textbag* or *Storyboard*, where every word in a short text is deleted, leaving only the title, the punctuation, and dashes or asterisks representing the letters of each word. The learner's task is to recreate the text by guessing whole words. When a correct word is guessed, it appears wherever it occurs in the text. The program has a HELP facility which can supply missing words and allow the learner to see the full text flashed up on the screen for a few seconds. These types of programs can be an immensely challenging activity for language learners as they require them to draw on a wide range of language knowledge.

Teaching writing

Writing is a laborious task for many people, in particular for the foreign language learner whose native writing system is different from that of the target language. The learner attempting a writing task must try to convey a message to his reader, which involves observing the rules of grammar, remembering the relevant vocabulary items, and incorporating the whole within a framework that involves correct paragraphing (Jones & Fortescue 1987). Appropriately used, the computer can relieve both teachers and learners of much of the drudgery usually associated with writing classes. Many of the programs used to teach grammar, vocabulary and reading help to develop the sub-skills needed for writing. At the same time, since many writing activities involve free expression, there are definite limits to the role that the computer can play.

The computer makes its greatest contribution to the development of writing skills as a word-processor. A word-processing package permits the user to store, edit, manipulate, retrieve, and print out text. Used in the creation, correction and editing of written assignments, the computer offers considerable advantages over the traditional medium of pen and paper. For one thing, it encourages the learner to experiment with words

and text and frees him from the mess of deletions and insertions that typify similar work on paper. The computer shows an instant and well-formed picture of the current state of the text. Using print commands, the learner can control the lay-out of his text, underlining or italicizing selected words and emphasizing parts of the text. While word-processors are very versatile programs, they are not necessarily difficult to use. For most purposes, it will be sufficient for learners to master only the basics: how to insert, delete and move text, together with the "search and replace" facility. Most word-processing programs have a spelling checker, which consists of a list of upwards of 30,000 words. Many foreign language learners feel unsure about spelling, and while a spelling checker does not do away with the need for a dictionary, it can help speed up the correction process. When a text is finished, the writer can run it through the spelling checker, which will draw attention to any words not contained in the list. Several spelling checkers also allow the user to add to the list, which is particularly useful for technical and specialist vocabulary.

A component of many writing curricula is guided writing, which is adaptable to computerization to the extent that it involves little or no free expression. In such activities learners are usually given a piece of writing which they must alter in some way. It might be a passage or dialogue which is incomplete, or a complete passage which is badly organized and needs changing. A word-processor is ideal for this sort of work and provides an ideal way of manipulating existing sentences and paragraphs in an effortless manner on the monitor. However, as we have already noted, when writing involves free expression, there are limits to the role the computer can play. Although it can always be used to focus attention on errors, it can do little to help with actual error correction, which is where the teacher must take over. It is rare for learners to be trained in the skill of redrafting or even to realize that it is relevant to their concerns. Most learners regard the writing activity as finished when they hand their work to the teacher, so an important stage in the writing process, feedback and self-correction, can be missing. However, when the computer is being used to perform a writing task, the learner can run his text through the spelling checker, which will draw attention to most spelling errors. He can then print out his text to hand in to the teacher and save it on disk. When he receives his corrected print-out, the learner accesses his text on the computer, and using the teacher's comments, corrects or edits his work as necessary before making a new print-out.

One way of motivating students to write is to provide them with a communicative reason for writing. Most learners are familiar with Teletext services, which allow access to vast amounts of information from commercial databases. Simple versions of these information systems can be created by learners, using information that is of interest to them. One such system, *Belltext*, is written by students of the Bell Language School and contains pages of college information, world news, jokes, entertainment, and forthcoming activities (Eastment 1985). Information pages could be created as class writing tasks and could be accessed on a computer or printed as a newsletter for distribution among learners. Used in this way, the computer can act as a stimulus and can help transform attitudes towards writing.

Teaching speaking

Of the four language skills, speaking is the one for which the computer in its present state of development can do least as far as standard class activities are concerned. However, although computers do not talk and listen, they are very good at stimulating people to talk and listen (Higgins & Johns 1984). Virtually any software can provide a context for conversation provided it is interesting to the learner and comprehensible in terms of linguistic and cultural content. CALL software designed for use in other skill areas can be used for speaking practice by assigning learners to work in pairs or in larger groups.

It has been suggested that the use of computers in language learning is in conflict with current trends which emphasize communication, especially oral interaction. However, Kenning & Kenning (1983, p.5) do not see any incompatibility between the communicative approach and the use of computers. They suggest that as well as being helpful in developing the basis necessary for achieving a reasonable level of communicative competence, computers have the advantage that they permit the splitting of the class and thus enable the teacher to create the kind of environment which simulation and other communicative activities require. In addition, computer simulations and adventures provide learners with a focus for oral activity and a continually changing scenario to talk about.

Computer simulations are essentially programs which enable the user to manipulate a "real life" or imaginary situation or set of data in order to test the outcomes of a decision. They provide a basis for activities which would be impossible using any other medium. The computer provides

instant feedback on the consequences of the decision in the form of an updated situation and the learners can follow the process through to an uncertain outcome. The feedback the computer gives is authoritative and there is no going back over unwise decisions. In using computer simulations careful preparation and management are necessary if their potential is to be fully exploited. During the preparation phase the teacher introduces the program, deals with any new vocabulary items, and can focus on specific language functions such as making suggestions, expressing probability or possibility, and so forth. The language exponents singled out for special attention will depend on the program being used and on the language learners' level of ability. The teacher's most important role occurs in the debriefing session, where learners get feedback on the quality of the language used during the activity. Learners should be encouraged to analyse their linguistic performance and if necessary to decide on remedial work. The potential subject matter of computer simulations is unlimited and there is a wide variety available to suit all tastes. The learner of English could run the British economy with *GB Ltd*, manage stocks and shares with *Stokmark*, or run a small business with *Fast Food*.

An adventure program differs from a simulation in that it has a single story with a definite plot which assigns the learner a task or sequence of tasks, often fraught with danger. Like simulations, adventure programs involve the teacher in careful preparation and classroom management if they are to be fully exploited. They can generate a lot of communicative oral language as learners work in groups or as a whole class towards the solution, and they can form the basis for various oral and written activities. One adventure program which has been specially designed for learners of English is *London Adventure*, which casts the learner in the role of tourist with a number of tasks to fulfil, such as changing money, buying postcards, and so on. The learner uses a menu of choices to decide where to go, and when language is called for he selects what he considers to be the most appropriate from a number of utterances.

Very few adventure programs have been written specifically for language learners, and those aimed at the leisure market are not always suitable for pedagogical purposes. However, the value of adventure programs lies essentially in the stimulus they provide for discussion and planning, and authoring packages like *The Last Adventure* and *The Quill* allow learners to create adventure scenarios for other learners to solve (Jones & Fortescue 1987).

Teaching listening

The whole area of listening and CALL is one which is undergoing rapid development. Learning to recognize and distinguish the sounds of a language is a prerequisite both for effective listening comprehension and for good pronunciation. Unfortunately the quality of speech generated by speech synthesizers is not yet particularly helpful to language learners as it is devoid of stress and intonation and in this respect cannot compare with a recorded human voice. However, the computer's power to interact with learners and provide feedback can be exploited in association with an audio or video recorder.

It is possible to use a manually controlled audio recorder in conjunction with a computer; but it is much easier to use a Tandberg AECAL cassette recorder, which was specifically designed to be operated *via* a computer, with either the learner or the program itself in control. The cassette recorder is used to present items of language to the learner and the computer is used to test the learner's responses. The computer gives instant feedback on the learner's responses, and as well as keeping a score, can be programmed to keep a record of the kinds of errors made by the learner. In addition to feedback, the computer can offer to let the learner hear a relevant item again. Because the computer controls the tape, the recorder will automatically and almost instantly rewind to the correct place and replay the desired item.

The computer can also be linked to a video source. With video, as Rushby (1979, p.39) points out, "although the student can view a particular sequence an unlimited number of times, the medium is still passive because it cannot respond differently to each student or vary its approach to take account of a student's individual problems". However, by interfacing a computer with a video source it is possible to give the user control of the video *via* the computer keyboard and to involve him actively in the running of the system. Interactive video can capitalize on a wealth of sound and vision and give an interactive dimension to already existing video material. The computer's power and capacity to store, manipulate and display information gives a versatility to interactive video unequalled by any other audio-visual medium (Parsloe 1983).

The video component of interactive video systems may be either videodisc or videocassette. Videodisc gives better picture and sound quality than videotape, offers instant random access, and can be played

frame by frame or as a moving picture. The disadvantages of the videodisc-based system are, as Bennett (1987, p.12) points out, mainly financial, and there is relatively little material available so far on videodisc. While videotape has the disadvantage of poor still-frame display and the linear character of tape means delays in access to different parts of the program, it has financial advantages in that videocassette recorders are commonplace and it is relatively inexpensive to produce video material provided one has the necessary recording and editing equipment.

The Autotutor interactive videocassette system was designed and developed in the Centre for Language and Communication Studies, Trinity College, Dublin, as a means of exploiting available video materials (Little & Davis 1986). The Autotutor is a low-cost system on which learning materials can be produced without recourse to video editing and without computer programming. The Autotutor's first role is that of presenting material to the learner by means of the video. It may then ask the learner to evaluate that presentation, offer a series of exercises, and provide immediate feedback. One video program can be used with several different computer programs to create a number of different interactive patterns, and grammatical, lexical and sociocultural information can be built into the computer program to aid comprehension and promote active viewing. The learner can move through the program at his own pace, and branching, which allows the user a choice of what to do, devolves responsibility on to the user for his interaction with the program. Rather than restricting the learner to a predetermined lesson, interactive video can free him to create, within limitations, his own learning experience. Little (1986, p.10) suggests that "if learners can be brought to the point of creating their own learning materials, not only will interactive video have been fully integrated in the language learning process, but learners themselves will have achieved almost total autonomy".

The potential of the computer to make an impact on the skills of speaking and listening is vast (Pennington 1989). The immediate advantage of using the computer as an aid to developing listening skills is in terms of feedback and individualization. The disadvantage of listening skills activities conducted on a whole-class basis is that it is difficult to give feedback that is continuous and individualized. By providing learning activities other than those managed personally by the teacher, the computer frees the teacher to deal with individuals or small groups of learners according to their assessed needs and provides the learner with an individualized

tutorial session at the keyboard.

Conclusion

Educational computing has added a new dimension to language learning: for the first time we have access to teaching materials that can be adapted to the needs, interests and individual motives of language learners. In addition, the computer offers students the means of assuming mastery over their own learning experience. The three main factors in CALL are the learner, linguistics, and computer technology; the computer itself is just a sophisticated piece of technological hardware that can be used well or badly. Future developments in CALL must be rooted in research, and Phillips (1986) points out that in considering the educational role of computer technology, consideration must be given to what sort of learning environment we want to create with the aid of the computer. Educational computing is still in its infancy, and the question arises whether this new language learning aid will merely reinforce current educational practices and methodologies or whether it will be successfully exploited to offer fruitful opportunities for curriculum renewal, and perhaps a reappraisal of some of the basic tenets of current educational practices.

References and bibliography

Ahmad, K., G. Corbett, M. Rogers & R. Sussex, 1985: *Computers, Language Learning and Language Teaching*. Cambridge University Press.

Bennett, T., 1987: "Future developments in the teaching of foreign languages", *Bulletin CILA* 46, pp.11-21.

Brown, E., 1988: "No call for CALL? 20th-century technology for 19th-century language teaching methodology". In D. Phillips (ed.), *Languages in Schools: from Complacency to Conviction*. London: CILT.

Brumfit, C. J., M. Phillips & P. Skehan (eds.), 1985: *Computers in English Language Teaching: A View from the Classroom*. ELT Documents 122. Oxford: Pergamon.

Butler, C., 1985: *Computers in Linguistics*. Oxford: Blackwell.

Davies, G., 1982: *Computers, Language and Language Learning*

Disick, R., 1975: *Individualizing Language Instruction*. New York: Harcourt Brace Jovanovich.

Dunkel, P., 1987: "Computer-assisted instruction (CAI) and computer-

assisted language learning (CALL): past dilemmas and future prospects for audible CALL", *Modern Language Journal* 71, pp.250-60.

Eastment, D., 1985: "The microcomputer network". In Brumfit et al.

Gardner, R. C., & W. Lambert, 1972: *Attitudes and Motivation in Second Language Learning*. Rowley, Mass.: Newbury House.

Higgins, J., 1988: *Language, Learners and Computers*. London & New York: Longman.

Higgins, J., & T. Johns, 1984: *Computers in Language Learning*. London & Glasgow: Collins.

Jones, C., & S. Fortescue, 1987: *Using Computers in the Language Classroom*. London & New York: Longman.

Kenning, M. J., & M. M. Kenning, 1983: *An Introduction to Computer-Assisted Language Teaching*. Oxford University Press.

Kelly, A. V. (ed.), 1984: *Microcomputers and the Curriculum*. London: Harper & Row.

Leech, G., & C. Candlin (eds), 1986: *Computers in English Language Teaching and Research*. London & New York: Longman.

Little, D., 1986: "Interactive video: teaching tool or learning resource?" Paper presented at British Council seminar on interactive video, London, 24-25 March.

Little, D., 1987: "Interactive video and the autonomous language learner", *Fremdsprachen und Hochschule: AKS Rundbrief* 19, pp.15-23.

Little, D., & E. Davis, 1986: "Interactive video for language learning: the Autotutor project", *System* 14, pp.23-34.

Parsloe, E. (ed.), 1983: *Interactive Video*. Wilmslow: Sigma Technical Press.

Pennington, M. C. (ed.), 1989: *Teaching Languages with Computers: the State of the Art*. La Jolla, Calif.: Athelstan Press.

Phillips, M., 1986: "CALL in its educational context". In Brumfit et al.

Rushby, N., 1979: *An Introduction to Educational Computing*. London: Croom Helm.

Sinclair, J. McH., & M. Coulthard, 1975: *Towards an Analysis of Discourse*. Oxford University Press.

Travers, R. M., 1973: *Educational Psychology. A Scientific Foundation for Educational Practise*. New York: Macmillan.

Underwood, J. H., 1984: *Linguistics, Computers and the Language Teacher. A Communicative Approach*. Rowley, Mass.: Newbury House.

Windeatt, S., 1986: "Observing CALL in action". In Leech & Candlin.

Wyatt, D. H., 1984: *Computers and ESL*. Orlando, Florida: Harcourt Brace

Jovanovich.
Wyatt, D. H., 1989: "Computers and reading skills: the medium and the message". In Pennington.

Software and its availability

Choicemaster (Acorn BBC; Apple). Authoring program for creating multiple-choice exercises/tests. Choice of tutorial mode (immediate feedback) or test mode (delayed feedback). Wida Software, 2 Nicholas Gardens, London W5 5HY.

Clozemaster (Acorn BBC; Apple). Authoring program for producing cloze exercises/tests. Automatic deletion with interval controlled by user, between every 5th and every 15th word. Printer facility. Wida Software.

GB Ltd (Acorn BBC; Spectrum 48K). Computer simulation program. Simon Hessel Software Ltd, 15 Lytham Court, Cardwell Crescent, Sunninghill, Berks, England.

Fast Food (Acorn BBC; Apple). Computer simulation program. Multi-user network facility. Cambridge University Press, Edinburgh Building, Shaftesbury Road, Cambridge, CB2 2RU, England.

Gapkit (Acorn BBC; Commodore 4032). Authoring program for creating gap-filling exercises. Gaps can be whole words, groups of words, parts of words. Includes automatic review of learners' errors. Printer facility. Camsoft, 10 Wheatfield Close, Maidenhead, Berks, SL6 3PS, England.

Hangman (Spectrum). Computer word game program available at two levels, Waystage and Threshold. Castle Software, P.O. Box 116, Eastbourne, East Sussex, BN22 9JZ, England.

Happy Writing (Acorn BBC; Amstrad 464; Electron). Letter recognition and formation program which draws letters, words and numbers. Adjustable speed. Bourne Educational Software Ltd, Bourne House, The Hundred, Romsey, Hants, SO5 8BY, England.

London Adventure (Acorn BBC; Apple). Multiple-choice adventure programme for EFL students, set in London. Cambridge University Press.

Matchmaster (Acorn BBC). Authoring program for creating matching exercises. Features 40- and 80-column matching and 'Snap', an animated matching exercise with various speeds. Wida Software.

Scrabble (Acorn BBC; Amstrad; Commodore 64). Computer version of the board game, for up to 4 players, including the computer. Leisure Genius, 2-4 Vernon Yard, 119 Portobello Road, London W11 2DX.

Speedread (Acorn BBC). Authoring program to create rapid-reading exer-

cises, with 9 speeds of presentation. Has an untimed reading option. Reading text is followed by multiple-choice questions to test comprehension. Wida Software.

Stokmark (Acorn BBC). Computer simulation program which is part of a Business Games package. Acornsoft Ltd, Cambridge Technopark, 645 Newmarket Road, Cambridge CB5 8PD, England.

Storyboard (Acorn BBC; Apple). Authoring program for creating text-reconstruction exercises where the whole text is deleted and replaced on screen by dashes and punctuation. Printer facility. Wida Software.

The Last Adventure (Acorn BBC). Authoring package for the creation of adventure games. Learning and Training Systems Ltd, Haydon House, Alcester Road, Studley, Warwickshire, B80 7AP, England.

The Quill (Acorn BBC; Amstrad 464; Spectrum). Authoring package for the creation of adventure games. Mirrorsoft, Poulton, Bristol, BS18 5BR, England.

Vocab (Acorn BBC). Authoring program for creating files of words together with clues/context sentences which are used as the basis for creating vocabulary activities: 'Mindword', 'Word Order', 'Skullman', 'Which Word', 'Alphagame', 'Anagrams'. Wida Software.

Wordstore (Acorn BBC). Database program which enables learners to create a dictionary with up to 1,000 entries. Wida Software.

All the software listed above may be ordered through International Books, 18 South Frederick Street, Dublin 2.

For a fuller list of CALL software, see the Software Directory in Jones & Fortescue 1987.